FIGURE 1
ON-BOARD PROGNOSTIC INSTRUMENT ENGINEER
(OPIE)

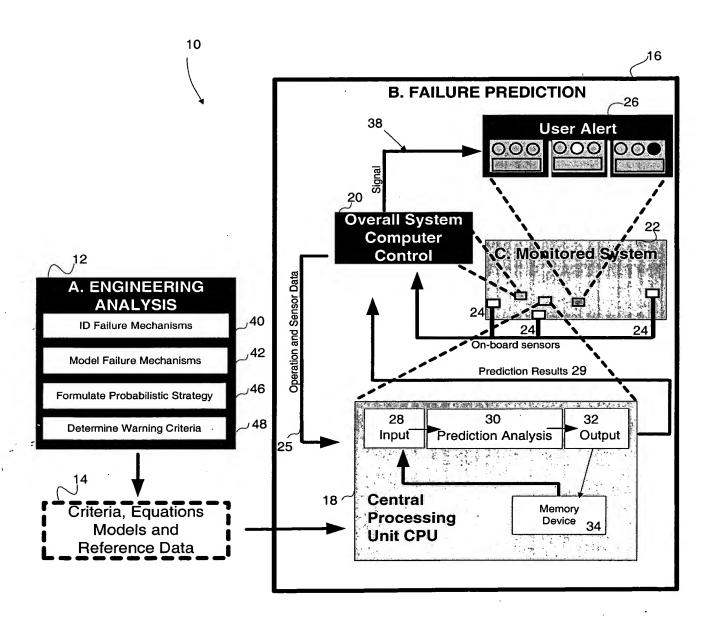
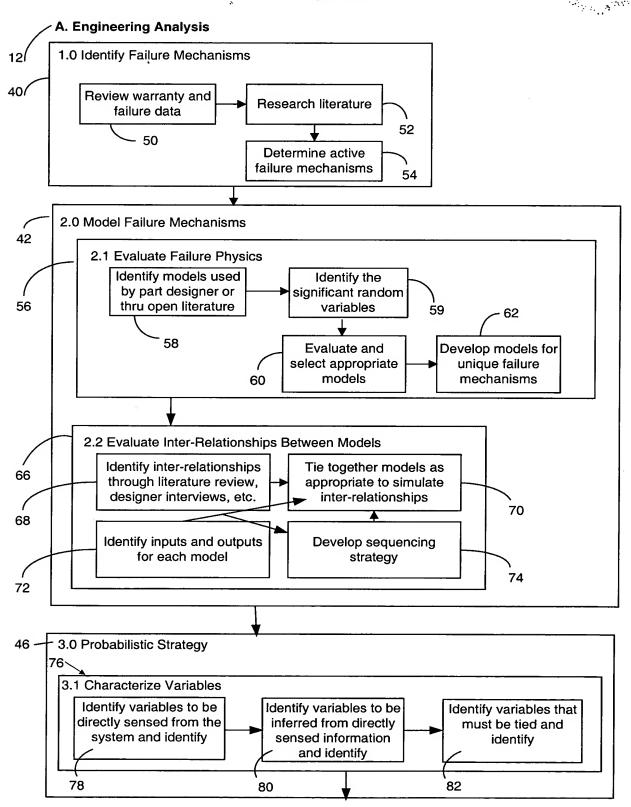


Figure 2A



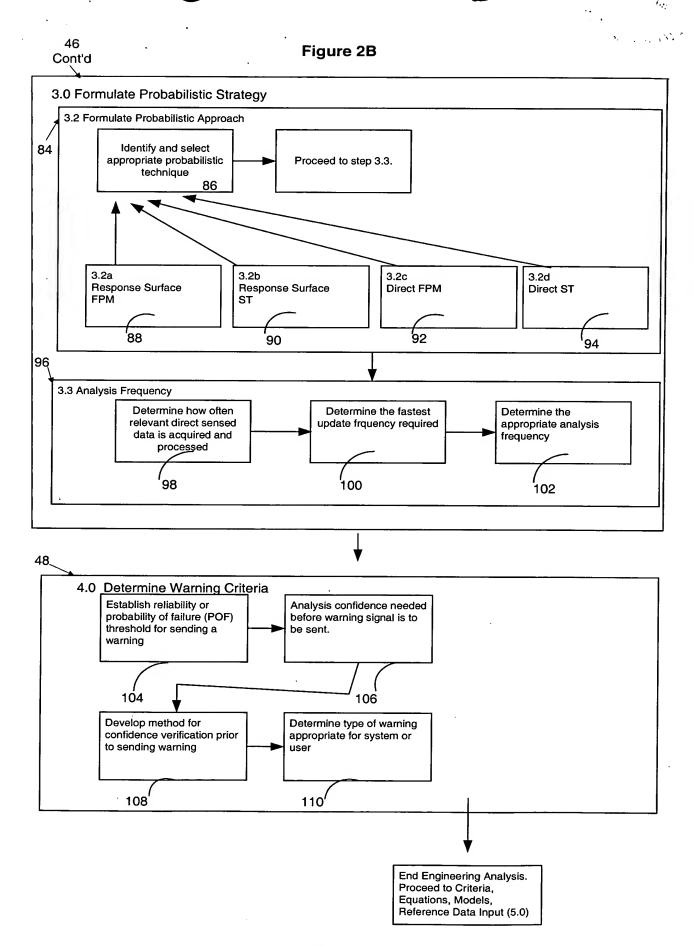


FIGURE 2C

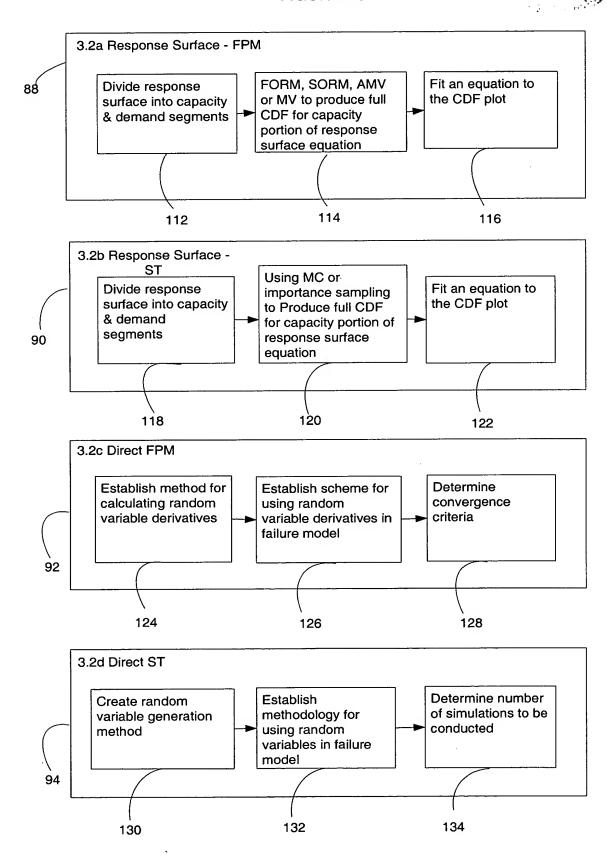


Figure 2D

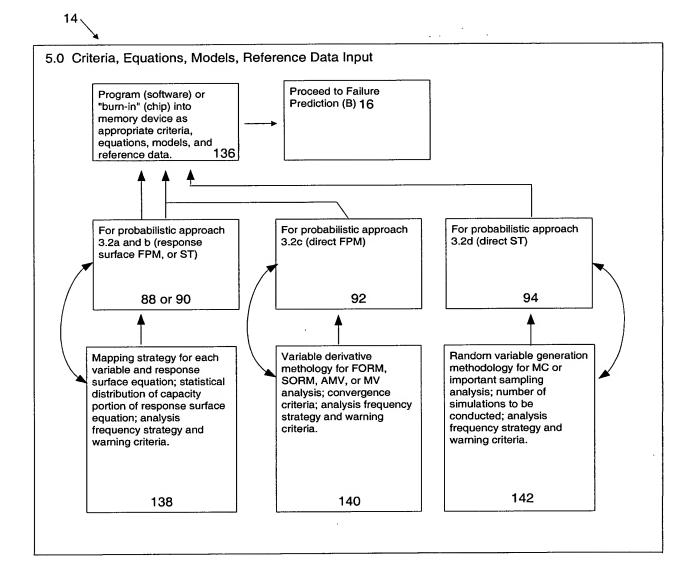


Figure 3A 18-1.0 Central Processing (CPU) 1.1 Input data 25 Read operation and sensor data (from Overall System Computer Control) according to frequency strategy, and map data to appropriate variables. 30 1.2 Prediction Analysis Use this process for Use this process for Use this process for Probabilistic Direct ST. Probabilistic Response Probabilistic Direct FPM. Surface. 88, 90 Determine POF using Calculate the "Demand" Establish reliability or probability portion of the response FORM, SORM, AMV or MV. of failure (POF). Determine surface. POF using MC or importance sampling. 152 146 156 Determine POF at Demand (using CDF equation) Compare POF to exceedence criteria and verified per confidence criteria. 160 Follow appropriate warning criteria. 162 32 1.3 Output Data Proceed to 174. Store variable readings, Communicate appropriate POF and selected warning warning information to Overall System Computer criteria and warning information into memory Control. device 34. 166 164

Figure 3B

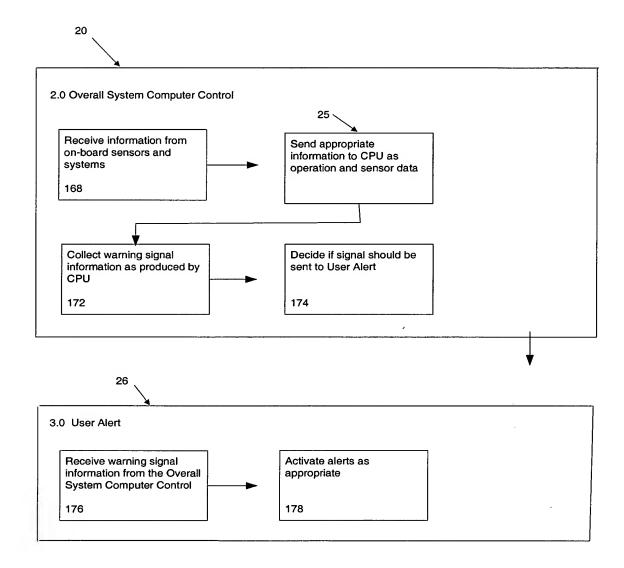
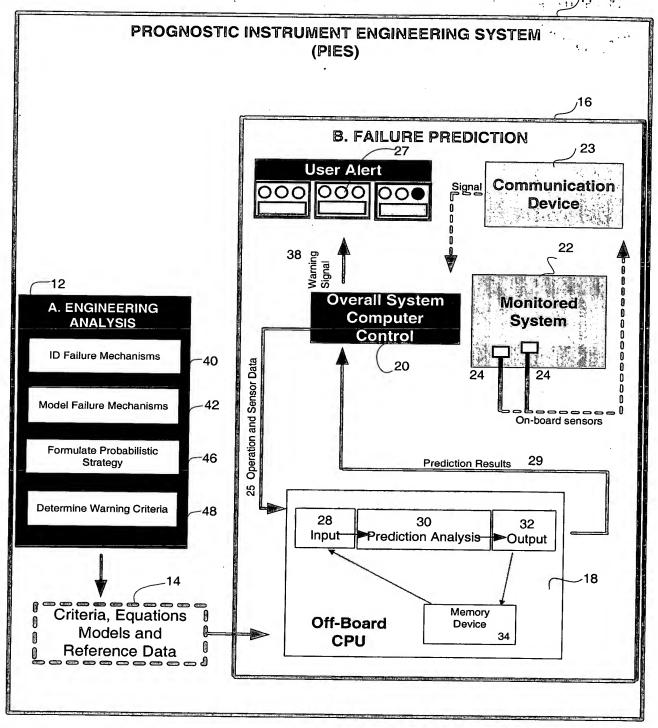


Figure 4



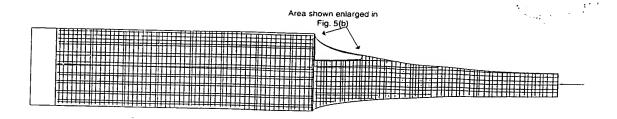


Figure 5(a)

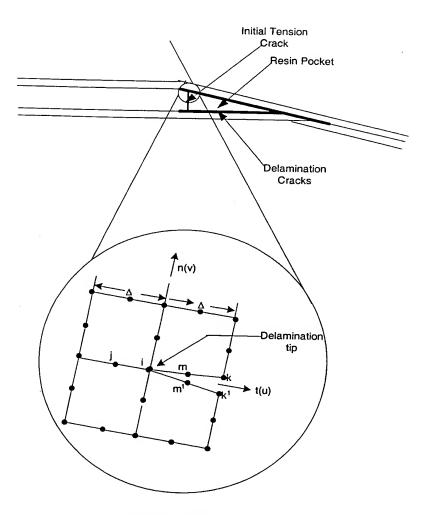


Figure 5(b)

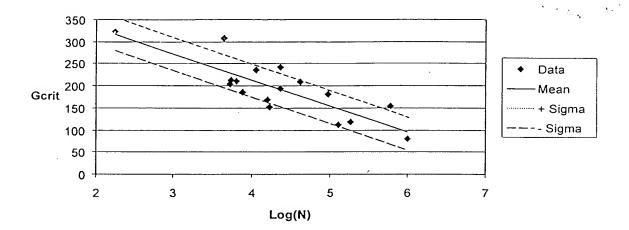


Figure 5(c)

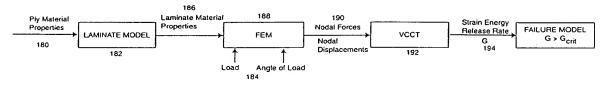


Figure 5(d)

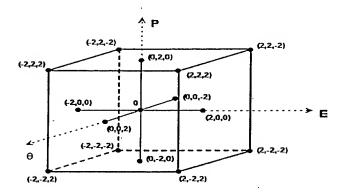


Figure 5(e)

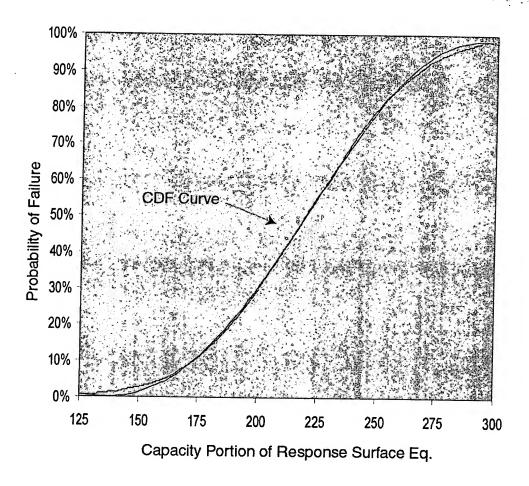


Figure 5(f)